

## NOTES ON AUSTRALIAN MOSQUITOES (DIPTERA, CULICIDAE). III.

THE SUBGENUS *LOPHOCERAOMYIA* IN VICTORIA.\*

By N. V. DOBROTWORSKY, Zoology Department, University of Melbourne.

(Two text-figures.)

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*Synopsis.*

Adults and all the early stages of *Culex orbostiensis*, n. sp., are described and an account is given of the biology and distribution of this species. The adults and the early stages of *Culex cylindricus* Theobald are redescribed.

The subgenus *Lophoceraomyia* is distributed in the Oriental and Australian regions, most of the species being confined to the tropics. Only two species extend down to Victoria: *Culex cylindricus* Theob. has been recorded (Reeves *et al.*, 1954) from the Mildura area in the north-west of the State; *Culex orbostiensis*, n. sp., occurs in the south-east.

Edwards (1932) divided the subgenus *Lophoceraomyia* into three groups, two of which are represented in Victoria: group A by *Culex cylindricus*, and group B by *Culex orbostiensis*, n. sp.

The description of *C. cylindricus* given by Theobald (1903) is brief; the published figures are very poor and some of them are misleading; for these reasons a redescription of this species is necessary.

*CULEX ORBOSTIENSIS*, n. sp.

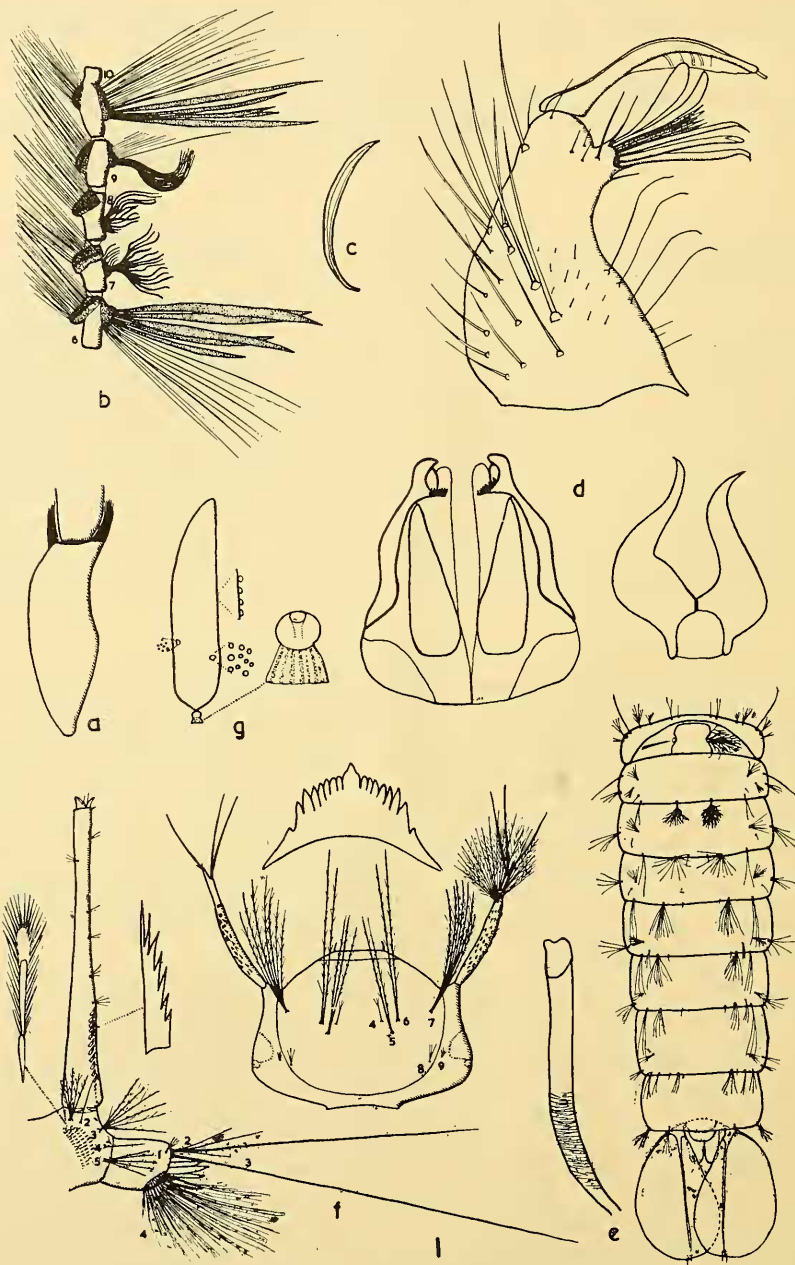
*Types:* Holotype male and allotype female are the progeny of a female collected at Orbost, Victoria, 21.2.56, and with the associated larval and pupal skins, are in the collections of the National Museum, Melbourne. A paratype series of five males and ten females from the same locality is divided among C.S.I.R.O. Division of Entomology, Canberra; the School of Public Health and Tropical Medicine, Sydney; the University of Queensland, Brisbane; the British Museum (Natural History), London, and the U.S. National Museum, Washington.

*Distinctive Characters:* Sixth and tenth antennal segments of the male with a tuft of long, narrow scales; seventh and eighth each with a short wavy tuft; ninth with a tuft of long, subapically curved hairs. Scutal scales small, dark-golden. Abdomen with white basal bands. Venter pale scaled.

*Male. Head:* Vertex with pale-goldish, narrow, curved, decumbent and upright scales, the last becoming black towards neck. Lateral scales, broad, flat and white. Proboscis black, covered with dull scales becoming blackish towards base and apex; about 15 long upright hairs dorsally towards apex. Palpi dark scaled, exceeding length of proboscis, including labella, by terminal segment; first segment with two hairy apical processes (Fig. 1, *a*); shaft with a few long hairs at apex; last two segments with long, dark hairs. Sixth and tenth antennal segments (Fig. 1, *b*) with a tuft of long, narrow scales; seventh and eighth with a short wavy tuft of modified hairs; ninth with a tuft of long, subapically curved hairs. *Thorax:* Anterior pronotum with bristles only. Posterior pronotum bare, with 2-4 proepimeral bristles. Scutal scales small, curved (Fig. 1, *c*), dark golden; scales paler around bare area and on scutellum. Scutellum with 4-6 long, black border bristles on central lobe and 3 on each lateral lobe. Lower part of sternopleuron with one strong bristle, a few weaker ones and a few scales, all towards posterior edge; a few scales and 2-3 bristles on boundary between

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this and pre-alar area. Mesepimeron with single lower bristle and 2-3 upper ones. No patch of scales on mesepimeron. *Wing*: Scales very scanty except towards tip of wing.



Text-fig. 1. *Culex orboستيensis*, n. sp. *a*, First segment of male palp; *b*, male antenna, segments 6-10; *c*, scale from scutum; *d*, male terminalia; *e*, pupal abdomen and trumpet; *f*, head, terminal segments and mentum of larva; *g*, egg.

Upper fork-cell about twice the length of its stem. Stem of lower fork-cell almost equal to stem of upper one. Wing length: 2.7-2.8 mm. *Legs* dark scaled, femora pale below. Front femur about two-thirds of length of proboscis. Front leg with one claw

toothed; other legs with single claws. *Abdomen* black scaled above with broad white basal bands. Venter pale scaled. *Terminalia* (Fig. 1, *d*): Style stout, curved, broadening distally, with a single setula; coxite with inner row of 4 long bristles. Subapical lobe of coxite with 3 long rods, 2 leaves and 5 more or less flattened bristles. Paraproct with small number of spines. Lateral plates of phallosome sharply pointed and bent, without teeth, and joined by narrow bridge near base. Lobes of ninth tergite with 5-6 setae.

*Female*: Differs from male as follows: Antennal segments without either scale tufts or short wavy tufts. Proboscis without upright hairs dorsally. Palps about one-eighth length of proboscis, including labella; third segment about twice as long as first two combined. Upper fork-cell about one and three-quarter times length of stem. Stem of lower fork-cell about one and one-fifth times length of stem of upper one. Wing length 3.0-3.7 mm. Tarsal claws of all legs simple. Front femur about four-fifths length of proboscis. Patch of scales on sternopleuron larger than in male. Upper part of mesepimeron with small patch of scales. White bands on tergites 3-7, as in male, moderately broad and not constricted laterally; tergite 8 pale scaled with a few black scales.

*Pupa* (Fig. 1, *e*): Cephalothorax: Trumpet long and slender, index about 10; seta 1, 2-branched; 2-3, 3-branched; 5, 4-5-branched; 6, 3-4-branched; 7, 2-branched; 8, 3-4-branched; 9, 3-branched. Metanotum: Setae 10 and 11, 2-branched; 12, 4-5-branched. Paddle oval; two single setae on tip of midrib.

*Larva* (Fig. 1, *f*): Head broad. Antenna long, strongly spiculated; tuft well developed, with about 30 plumose branches; subterminal setae strong, slightly removed from tip. Head seta 4 tiny, with 2-4 branches; 5, long, 2-3-branched; 6, longer than 5, 2-branched; 7, long, 6-7-branched; 8, small, 3-4-branched; 9, smaller than 8, 3-branched. Mentum with broad central tooth and 8 lateral teeth on each side. Prothoracic chaetotaxy: Setae 1 and 2, single, long; 3, 2-branched, about one-quarter length of 1 and 2; 4, 2-branched, twice as long as 3; 5 and 6, single, long; 7, 3-branched, about two-thirds as long as 6; 8, 2-branched, about the same length as 7. Eighth abdominal segment: Pentad setae: 1, 4-5-branched, slightly plumose; 2, single; 3, 6-7-branched, plumose; 4, single, 5, 5-branched, slightly plumose. Comb of about 50 fringed scales. Siphon slender, index 8.0-9.0. In some Queensland specimens siphon has a faint dark band just beyond the middle. Pecten of 14-16 spines, each with several denticles. Five pairs of subventral setae each of 2-4 branches; setae usually less than diameter of siphon of point of attachment. Anal segment: saddle complete; setae: 1, 3-4-branched; 2, with one long and 3 short branches; 3, single, long; 4 of 11-12 tufts, each 3-7-branched. Anal papillae almost equal in size, slightly less than half length of saddle.

*Eggs* (Fig. 1, *g*) are deposited in oval rafts. After a human blood meal the rafts contain 43-50 eggs laid in 5-6 rows, each row containing up to 10 eggs. The egg is dark brown, almost straight; at the anterior pole there is a funnel-like corolla. The exochorion is granulate. The egg is about 0.7 mm. long with an index of about 4.

*Distribution*: In Victoria: East Gippsland, Maroondah (30.1.53, 20.1.54), collected by author; Christmas Hills (27.2.52), D. L. McIntosh; Mildura (18.1.52), E. N. Marks. This species is also distributed in Queensland and I have examined specimens from the following localities: Camboon, Townsville, Atherton (N.Q.), Sandgate (E. N. Marks), Bundaberg (J. L. Wassell), Chermiside (P. J. Sparks) and Boldery Park, Cooyar Distr. (M. Loveday).

*Biology*: In Victoria this species is common only near Orbost in the eastern corner of Gippsland, where it is a vicious day-biting mosquito. In Queensland (Marks, personal communication) it is most common on and near coastal heath swamps.

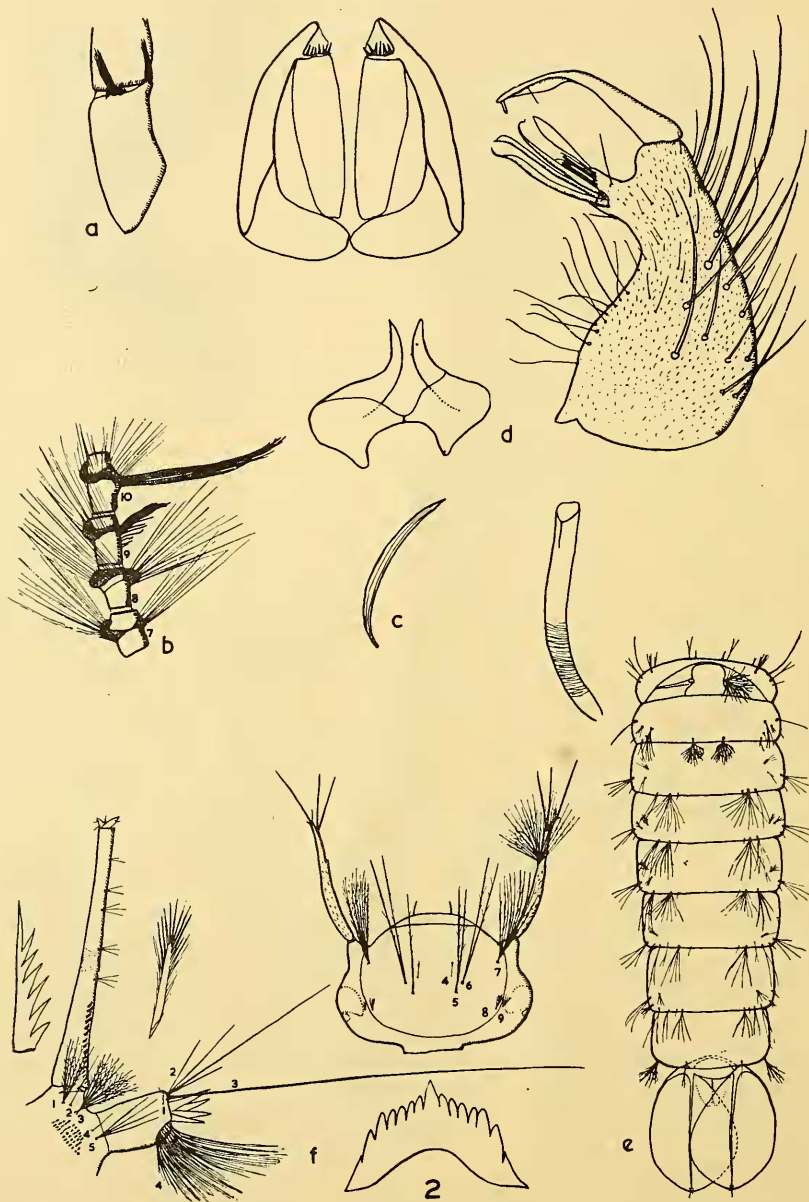
#### CULEX CYLINDRICUS Theobald.

*Mon. Cul.*, Vol. 3, p. 202 (1903).

*Distinctive Characters*: Antennal segments 6-8 of male without scale-tufts; segments 9 and 10 with tuft of matted hairs. Scutum covered with silvery scales. Abdomen with white basal bands. Venter pale scaled.



*Male. Head:* Vertex with pale narrow curved decumbent and upright scales. Lateral scales broad, blackish, becoming white towards postgena. Proboscis black scaled. Palpi dark scaled, exceeding length of proboscis, including labella, by about



Text-fig. 2. *Culex cylindricus* Theobald. a, First segment of male palp; b, male antenna, segments 7-10; c, scale from scutum; d, male terminalia; e, pupal abdomen and trumpet; f, head, terminal segments and mentum of larva.

length of terminal segment; first segment (Fig. 2, a) with two hairy apical processes; shaft with 4-5 long hairs at apex; last two segments sparsely clothed with long hairs. Ninth antennal segment with short tuft of matted hairs, tenth with long tuft of thick matted hairs (Fig. 2, b). *Thorax:* Anterior pronotum with bristles only. Posterior

pronotum bare, with 4-5 proepimeral bristles. Scutal scales silvery, with light-goldish gleam, only slightly curved (Fig. 2, c). Dorsocentral bristles black. Scutellum with 6 long, black border bristles on central lobe and 3 on each lateral lobe. Sternopleuron with 3 strong and 2 weaker bristles and a row of scales, all towards posterior edge. Middle part of sternopleuron with small patch of scales. Mesepimeron with single lower and 4-5 upper bristles. Wing scales very scanty. Upper fork-cell about twice the length of its stem. Stem of lower fork-cell slightly longer than that of upper one. Wing length: 2.2-2.8 mm. Legs dark scaled, front femur about four-fifths length of proboscis. Front leg with one claw toothed, other legs with simple claws. Abdomen black scaled dorsally, with broad white bands, venter pale scaled. Terminalia (Fig. 2, d): style stout, curved, with single setula; coxite with about a dozen long bristles on inner side. Subapical lobe of coxite with 1 leaf, 5 more or less flattened setae and 3 long rods. Paraproct with small number of short spines. Lateral plates of phallosome pointed and bent, joined by narrow bridge. Each lobe of ninth tergite with 4-8 setae.

*Female*: Differs from male as follows: Antennal segments without scale tufts. Palps about one-seventh length of proboscis, including labella. Upper fork-cell about 3 times as long as its stem. Stem of lower fork-cell about one and a half times length of stem of upper one. Wing length: 2.6-3.6 mm. Tarsal claws of all legs simple. Front femur about four-fifths length of proboscis, including labella. Patches of scales on pleura more prominent. Bands on tergites 2-3 constricted laterally, on 4-7 almost parallel; tergite 8, black with patch of white scales basally.

*Pupa* (Fig. 2, e): Cephalothorax: Trumpet long and slender with small opening; index about 10. Setae: 1 and 3, 3-branched; 2, 4-branched; 4, 2-branched; 5, 3-branched; 6, 7, 8 and 9, 2-branched. Metanotum: setae 10 and 11, 2-branched; 12, 3-branched. Paddle oval, with two single setae on tip of midrib.

*Larva* (Fig. 2, f): Examination of a number of larvae from New South Wales and Queensland has failed to reveal any morphological traits distinguishing them from the larvae of *C. orbstiensis*. The larvae, however, have a conspicuous dark band across the middle of the siphon. This feature will serve to distinguish them from *C. orbstiensis* larvae from Victoria but is not a reliable character for Queensland material. Larvae of *C. cylindricus* from New South Wales and Queensland show a striking difference in siphonal index: N.S.W., 9.2-11.0; Queensland, 7.3-8.4.

*Distribution*: In Victoria, so far, it has been recorded by Reeves *et al.* (1954) from the Mildura area, where 25 females, mostly on cow bait, and one resting male, were collected. I have also examined specimens from N.S.W.: Armidale area (E. J. Waterhouse) and Queensland: Burpengary, Camp Mt. (E. N. Marks), Belmont (K. H. Brooks), Charleville (W. R. Horne), Ferny Grove (E. J. Reye), Chermerside and Apsley (P. J. Sparks), Wengenville, Carnarvon Range (J. L. Wassell).

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